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EXAMINER	
LAY, MICHELLE K	

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,932	PAIR ET AL.	
	Examiner	Art Unit	
	Michelle K. Lay	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29 and 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4-1-08
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 04/01/2005 is being considered by the examiner with the submission of English abstracts of references DE10042982, DE10123849, FR2807527, DE19909936, DE19954885, EP1213686, FR2603815, JP2000187447, JP09187573.

Response to Arguments

Applicant's arguments, filed 06/23/2006, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is has shown below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim **21** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 21 recites the limitation "generate matter or energy" in line 3. It is unclear how matter or energy can be generated. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim **32** is rejected under 35 U.S.C. 103(a) as being unpatentable over Richey (5,310,794) in view of Lyons (6,181,343 B1).

Richey teaches the limitations of claim 32 with the exception of disclosing updating the sequence of images. However, Lyons teaches manipulating the information on a large-screen display, in response to interaction with the user.

Richey discloses à panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23), in which display units surround the viewer such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [col. 9, lines 14-23)]. The floor (130) and its associated display unit (11) beneath, to the sides, and over the viewer/operator are integrated so the viewer is presented with a substantially continuous scene for viewing [col. 28, lines 15-19]. Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers, allow the entry and exit assembly (131) to move back and forth in an open and closed position to

enable viewer entry and exit [col. 28, lines 28-32]. These means may also be used for easy assembly and disassembly. Richey discloses that it is further foreseen that the optical and camera arrangements disclosed in Figs. 6-17 may transmit their recorded image to various types of sensors such as visual, motion detection, and pyroelectric sensors [col. 34, lines 57-61]. Additionally, referring to Figs. 21 and 22 of the head mounted display worn by the viewer/operator within the assembly, as the viewer/operator moves his head, the updated coordinates cause the multipliers and adders of the video effects unit (7) to update the field of view every 8 frames. Thus, the HMD contains sensors that aide in updating the display as effected by the user. Furthermore, the contents of the images change depending on the user's change of view, e.g. looking left, right, up or down. Therefore, the images alter as depending on the user's interaction within the environment.

Lyons teaches a system and method for permitting three-dimensional navigation through a virtual reality environment. The video image display means displays three-dimensional graphical objects within the virtual reality environment, and movement by the system users causes apparent movement of the three-dimensional objects displayed on the video image display means so that the system user appears to move throughout the virtual reality environment [col. 6, lines 22-28]. Additionally, as described in Fig. 6, by taking a step forward, user (62) causes SBIP (60) to move graphical images (92) on display screen (54) so that the user (62) appears to be moving forward through virtual reality environment (94). Furthermore, the user can move left, right, stop or in reverse,

and the SBIP (60) updates the graphical images (92) accordingly on the display screen (54) [col. 9, line 37 – col. 10, line 10].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the display units of Richey to incorporate the SBIP of Lyons in order to omit the need for the HMD of Richey. It would be advantageous for the omission of the HMD so that it is convenient to the user to be able to step into the display assembly of Richey without having to wear additional hardware. Furthermore, by not having to wear a HMD, it allows the user to feel as if they are within a real environment, and not a virtual reality system.

2. Claims **1–23**, and **29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Richey (5,310,794) in view of Ohshima et al. (2003/0032484 A1) and Lyons (6,181,343 B1).

Richey teaches the claimed limitations of claims **1–20**, and **29**, with the exception of teaching placing at least one real, three-dimensional object within the structure and updating the sequence of images. However, Lyons teaches manipulating the information on a large-screen display, in response to interaction with the user and Ohshima discloses a gaming apparatus that incorporates real and virtual objects.

In regards to claims **1-4**, and **14-16**, Richey discloses a panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23) (claim **1**), in which the viewer is

surrounded by display units such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction (claims **1**, **2**) [col. 9, lines 14 – 19)]. The assembly is designed to facilitate a single or plural number of viewers (claim **16**) [col. 28, lines 14 – 15]. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [col. 9, lines 20 – 23)]. The floor (130) and its associated display until (11) beneath, to the sides (claim **4**), and over the viewer/operator (claim **3**) are integrated so the viewer is presented with a substantially continuous scene for viewing [col. 28, lines 15 – 19]. Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers (claim **15**), allow the entry and exit assembly (131) to move back and forth in an open and closed position to enable viewer entry and exit [col. 28, lines 28 – 32]. These means may also be used for easy assembly and disassembly (claim **14**). Components of the display assembly cooperate to display a substantially continuous panoramic scene of spherical coverage about the viewer [col. 9, lines 33]. The panoramic scene consists of a plurality of image segments that form a composite image on a single video frame (claim **1**). Image segments represent portions of camera recorded scene or computer graphic information. Typically the segments represent adjacent portions of the surrounding panoramic scene. Each image segment is displayed at a designated area within the display assembly such that the recorded scene is re-formed in the same geometric or geographic orientation in which the scene was recorded [col. 9, lines 48 – 54]. Additionally, referring to Figs. 21 and 22 of the

head mounted display worn by the viewer/operator within the assembly, as the viewer/operator moves his head, the updated coordinates cause the multipliers and adders of the video effects unit (7) to update the field of view every 8 frames. Thus, the HMD contains sensors that aide in updating the display as effected by the user. Furthermore, the contents of the images change depending on the user's change of view, e.g. looking left, right, up or down. Therefore, the images alter as depending on the user's interaction within the environment.

Ohshima disclose a game apparatus within mixed reality. The locations of the player and real object are detected, and the relative positional relationship between the player or real object, and the virtual object is recognized [*abstract*]. As shown in Figs. 2 and 3, table (100) has real objects that appear in the game. The real objects (101, 104) have location sensors (103) so that the virtual images of the game can behave accordingly. The HMD worn by the user displays the virtual object (102) as well as the table [[0100]-[0103]].

Lyons teaches a system and method for permitting three-dimensional navigation through a virtual reality environment. The video image display means displays three-dimensional graphical objects within the virtual reality environment, and movement by the system users causes apparent movement of the three-dimensional objects displayed on the video image display means so that the system user appears to move throughout the virtual reality environment [col. 6, lines 22-28]. Additionally, as described in Fig. 6, by taking a step forward, user (62) causes SBIP (60) to move graphical images (92) on display screen (54) so that the user (62) appears to be moving forward through virtual reality

environment (94). Furthermore, the user can move left, right, stop or in reverse, and the SBIP (60) updates the graphical images (92) accordingly on the display screen (54) [col. 9, line 37 – col. 10, line 10].

Therefore, it would have been obvious to one in the art at the time the invention was made to modify the invention of Richey to include the real objects of a mixed reality system of Ohshima. One would have been motivated to make such a modification so that the user feels completely immersed within the virtual reality world of Richey. The use of real objects and moveable surface area further provides the user a sense of a comfortable reality so that users may be able to physically touch three-dimensional objects without having to pretend they are objects within the space. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the display units of Richey to incorporate the SBIP of Lyons in order to omit the need for the HMD of Richey. It would be advantageous for the omission of the HMD so that it is convenient to the user to be able to step into the display assembly of Richey without having to wear additional hardware. Furthermore, by not having to wear a HMD, it allows the user to feel as if they are within a real environment, and not a virtual reality system.

In regards to claim **5**, it would have been obvious to one in the art that the display units located on the sides of the large display assembly of Richey may project images to one's liking, such as an image of wall texture as claimed.

Referring to claims **6–10**, and **18**, it would have been obvious to one in the art to allow other real objects of Ohshima within the virtual display of Richey in view of Lyons to give the user a more real experience within the display assembly and due to the volumetric space within the room. Since a number of people are shown in this room, providing chairs and other objects would make for a more comfortable environment. These objects may include an operable door (claim **6**), working window (claims **7**, **8**) with operable shutters (9), and dummy walls (claim **18**). Furthermore, in regard to claim **10**, if the object is a window or a door, it would have been obvious to one in the art that the displays behind such objects may depict images of appropriate environments that one may find when looking through such objects to simulate to the user a real environment or different location. Additionally, if the objects are dummy walls within the display assembly of Richey, multiple rooms may be created for the user (claim **18**). The same rationale for combining as applied to claim 1 is incorporated herein.

In reference to claims **11–13**, Richey illustrates in Fig. 6 the input means for recording a panoramic scene of spherical coverage, which is the panoramic camera system including a camera (43), and which comprises a portable panoramic video viewing and recording system (27), referred to as a panoramic camcorder. The panoramic camcorder (27) is carried by a host or vehicle [col. 10, lines 6-13]. It may be obvious to one in the art that the images captured by the panoramic camcorder (27) may comprise images from the real environment (claim **12**). Referring to Figs. 9-12, the optical elements (41) are interfaced with

the camera (43) to facilitate the composite image (26) being transmitted to the recording surface (42) of the camera (43) by conventional means. The recording surface (42) is directly associated with an image processor means (44) of a self-scanning solid state imaging device such as a charge coupled device located in the image plane of each respective lens element (41) (claim **13**) [col. 11, lines 57-65]. Referring to Figs. 6-10 and 15-17, the electrical section (45) is structured to convert the visual images received by the image processor (44) into electrical video signals [col. 12, lines 66-68] such that the information is in a format that is compatible with standard video processing equipment [col. 13, lines 1-2]. As shown in Fig. 6 and 9, the picture signal from the camera (43) is then transferred through conductor (46) to a conventional portably structured videotape recorder/player (47) [col. 13, lines 14-17]. The television signal is then stored by the recorder/player (47) on videotape (claim **11**) [col. 13, lines 29-30]. Additionally, Lyons teaches displaying live video of a camera input of a remote site (claim **13**) [col. 7, lines 10-21]. The same rationale for combining as applied to claim 1 is incorporated herein.

Regarding claims **17**, and **19**, it would have been obvious to one in the art that the real objects of Ohshima may include objects that coincide with what is displayed on the screen, allowing for a simulated environment to the user within the display assembly of Richey in view of Lyons. Such an environment may be a design choice, such as an alleyway, as claimed in claim **19**, where the real objects of Ohshima may include a car. The displays of Richey in view of Lyons

may project images consisting of bricks to portray to the user that he/she is in an alleyway. The same rationale for combining as applied to claim 1 is incorporated herein.

In reference to claim **20**, Ritchey discloses that is may be foreseen that the display assembly [Fig. 32 (23)] may be used as a simulator for various kinds of vehicles [Fig. 55 (149)]. Referring to Figs. 54 and 55, the device might take the form of simulated controls (150) for such vehicles (149) as a land, sea or air vessel as claimed [col. 34, lines 34-40].

In regards to claims **21-23**, Lyons discloses incorporating audio features to provide voice-recognized commands from the system user and sound effects to the display screen [col. 13, lines 38-42]. Although Lyons does not explicitly disclose a sound generating apparatus, it is implicit that the audio/visual monitor system of Lyons [col. 7, lines 65-68] includes some type of sound generating apparatus in order to provide sound effects to the display screen. The same rationale for combining as applied to claim 1 is incorporated herein.

Regarding claim **29**, Richey discloses a stereographic field of view is arrived by sampling left and right eye fields of either of side of the orientation defined by the position sensors [Fig. 26 (97)]. To achieve a stereographic effect, image segments [Fig. 29 (13)] for the left eye and right eye are chosen from two adjacent objective lenses [Fig. 17 (37)], each with a different, but adjacent,

overlapping field of view of the visual scene. Fig. 30 illustrates the resultant stereoscopic image (101) that the image processing system has processed for stereographic display [col. 21, lines 50-62].

3. Claims **21**, **24**, **26**, and **28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Richey (5,310,794) in view of Ohshima et al. (2003/0032484 A1) and Lyons (6,181,343 B1) as applied to claim 1 above, and further in view of Latypov et al. (6,563,489 B1).

Richey in view of Ohshima and Lyons teaches the claimed limitations of claims **21**, **24**, **26**, and **28** with the exception of including a computer-controlled sensory generator, other than a display. However, Latypov teaches a system for immersing a user in a virtual reality that includes controlling the temperature and air content.

Referring to Fig. 13 of Latypov, the system of Latypov comprises means (30) to control temperature and air content in the sphere (claims **26**, **28**), which is an air conditioner (claims **21**, **24**) [col. 6, lines 29-31]. Additionally, the sphere of Latypov

Therefore, it would have been obvious to one of ordinary skill in the art to include the temperature and air generating conditions of Latypov within the display assembly of Richey in view of Ohshima and Lyons because the added environmental changes (i.e. additional sensory) enhances the virtual environment to portray to the user that he/she is in a real atmosphere.

4. Claims **21**, **24**, and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Richey (5,310,794) in view of Ohshima et al. (2003/0032484 A1) and Lyons (6,181,343 B1) as applied to claim 1 above, and further in view of Tanide et al. (6,201,516 B1).

Richey in view of Ohshima and Lyons teaches the claimed limitations of claims **21**, **24**, and **25** with the exception of including a computer-controlled sensory generator, other than a display. However, Tanide teaches a system for sensation.

Tanide teaches the operation floor (66) [Fig. 11, 12] is controlled via the motion drive device (22d) (claims **21**, **24**). The floor (66) can be vertically moved, twisted, tilted, or displayed (claim **25**) [col. 12, line 61 – col. 13, line 21].

Therefore, it would have been obvious to one of ordinary skill in the art to include the floor operation of Tanide within the display assembly of Richey in view of Ohshima and Lyons because the added environmental changes (i.e. additional sensory) enhances the virtual environment to portray to the user that he/she is in a real atmosphere.

5. Claims **21**, and **27** is rejected under 35 U.S.C. 103(a) as being unpatentable over Richey (5,310,794) in view of Ohshima et al. (2003/0032484 A1) and Lyons (6,181,343 B1) as applied to claim 1 above, and further in view of Dowling et al. (2003/0057884 A1).

Richey in view of Ohshima and Lyons teaches the claimed limitations of claims **21**, and **27** with the exception of including a computer-controlled sensory

generator, other than a display. However, Dowling teaches system consisting of a virtual world in coordination with information received from the display.

Dowling teaches using LED lighting systems (or other types of lighting systems) for enhancement of computer game where there is a user in a real world environment that surrounds the display screen [0037]. The computer software need not be a game, but of any type of computer application [0036]. In use, the illumination system can be used to provide information to the user (101) in response to or in coordination with the information being provided to the user (101) by the video display (104). One example of how this can be provided is in conjunction with the user playing a computer game on the computing device (103). The light system may be used to create one or more light effects in response to action on the video display (104) [0049].

Therefore, it would have been obvious to one of ordinary skill in the art to include the floor operation of Dowling within the display assembly of Richey in view of Ohshima and Lyons because the added environmental changes (i.e. additional sensory) enhances the virtual environment to portray to the user that he/she is in a real atmosphere.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday through

Thursday from 7:30am to 5:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee M. Tung, can be reached at (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle K. Lay
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07.05.2006 mkl

KEE M. TUNG
SUPERVISORY PATENT EXAMINER

PATENT EXAMINER